

What is claimed is:

1. A cooling plate comprising:

a plate member made of a copper material having a fine-grained structure possessing an average particle size of less than 10 mm, the plate member having integrated coolant channels, wherein the thickness of the plate member is reduced by machining the final cross-sections of the coolant channels.

2. The cooling plate as recited in claim 1, wherein the particle size is less than 5mm and is preferably between 0.005 mm and 2 mm.

3. The cooling plate as recited in claim 1, wherein the final cross-sections of the coolant channels are oval.

4. The cooling plate as recited in one of claim 1, wherein a first side of the plate member has grooves for accommodating fireproof material.

5. A method for manufacturing a cooling plate having a plate member, comprising the steps of:

initially providing a raw ingot made of a copper material, the raw ingot having a starting thickness greater than a final thickness of the plate member;

reducing the starting thickness of the raw ingot to the final thickness of the plate member, using at least one forming step; and

producing coolant channels in one of the raw ingot and the plate member prior to attaining the final thickness.

6. The method as recited in claim 5, wherein the coolant channels have circular cross-sections prior to the reducing step, the coolant channels are deformed in response to the thickness of the plate member being reduced to the final thickness, so that the coolant channels have oval cross-sections.

7. The method as recited in claim 5, wherein the step of reducing the starting thickness of a raw ingot is accomplished by cold rolling; the step of producing channels having circular cross-sections is subsequent to the rolling, the channels having a circular

cross-section; and the step of reducing continues to reduce the ingot to the final thickness of the plate member, while the channels are deformed into coolant channels having oval cross-sections.

8. The method as recited in claim 5, wherein the channels having circular cross-sections are mechanically drilled into one of the raw ingot and the plate member, using deep-hole drilling.

9. The method as recited in claim 5, wherein the channels are cast into the raw ingot.